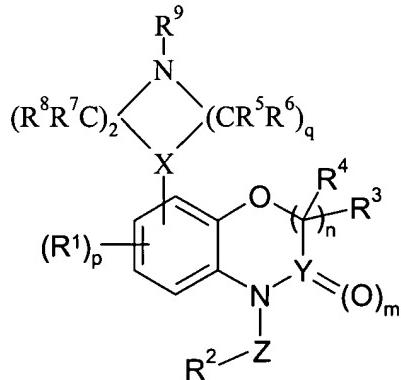


**Claim Listing**

1. (Previously Presented) A compound of the formula:



or a pharmaceutically acceptable salt or prodrug thereof,

wherein:

Y is C;

m is 1;

n is 1;

p is from 0 to 3;

q is from 1 to 3;

Z is  $-(CR^aR^b)_r-$  or  $-SO_2-$ , where each of  $R^a$  and  $R^b$  is independently hydrogen or alkyl;

r is from 0 to 2;

X is CH or N;

each  $R^1$  is independently halo, alkyl, haloalkyl, heteroalkyl, alkoxy, cyano,  $-S(O)_sR^c$ ,  $-C(=O)-NR^cR^d$ ,  $-SO_2-NR^cR^d$ ,  $-N(R^c)-C(=O)-R^d$ , or  $-C(=O)R^c$ , where each of  $R^c$  and  $R^d$  is independently hydrogen or alkyl;

s is from 0 to 2;

$R^2$  is aryl or heteroaryl;

each of  $R^3$  and  $R^4$  is independently hydrogen, alkyl, hydroxyalkyl or alkoxyalkyl, or  $R^3$  and  $R^4$  together with their shared carbon may form a carbocyclic ring of 3 to 6 members; and

each of R<sup>5</sup>, R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup> and R<sup>9</sup> is independently hydrogen or alkyl, or one of R<sup>5</sup> and R<sup>6</sup> together with one of R<sup>7</sup>, R<sup>8</sup> and R<sup>9</sup> and the atoms therebetween may form a ring of 5 to 7 members.

2. (Original) The compound of claim 1, wherein Z is -(CR<sup>a</sup>R<sup>b</sup>)<sub>r</sub>-.
3. (Original) The compound of claim 2, wherein X is N and q is 2.
4. (Canceled)
5. (Previously Presented) The compound of claim 3, wherein r is 1.
6. (Original) The compound of claim 5, wherein R<sup>a</sup> and R<sup>b</sup> are hydrogen.
7. (Original) The compound of claim 6, wherein R<sup>2</sup> is optionally substituted phenyl or optionally substituted naphthyl.
8. (Original) The compound of claim 7, wherein R<sup>2</sup> is 2-halophenyl, 3-halophenyl, 4-halophenyl, naphthylen-2-yl, 3-cyanophenyl, 4-cyanophenyl, 3-nitrophenyl, 3-aminophenyl, 3-methoxyphenyl, 3-ureaphenyl, or 3-methylsulfonylamino-phenyl.
9. (Original) The compound of claim 7, wherein p is 1 and R<sup>1</sup> is halo, methyl or methoxy.
10. (Original) The compound of claim 7, wherein R<sup>3</sup> and R<sup>4</sup> are hydrogen.
11. (Original) The compound of claim 7, wherein R<sup>3</sup> and R<sup>4</sup> are methyl.
12. (Original) The compound of claim 7, wherein one of R<sup>3</sup> and R<sup>4</sup> is hydrogen and the other is methyl.

13. (Currently Amended) The compound of claim 7, wherein R<sup>3</sup> and R<sup>4</sup> together with the carbon atom therebetween form a cyclobutyl.

14. (Previously Presented) The compound of claim 8, wherein said compound is selected from:

4-benzyl-6-methyl-8-piperazin-1-yl-**H**-benzo[1,4]oxazin-3-one;  
4-benzyl-6-methoxy-8-piperazin-1-yl-**H**-benzo[1,4]oxazin-3-one;  
4-(2-fluoro-benzyl)-6-methoxy-8-piperazin-1-yl-**4H**-benzo[1,4]oxazin-3-one;  
4-(2-chloro-benzyl)-6-methoxy-8-piperazin-1-yl-**4H**-benzo[1,4]oxazin-3-one;  
4-(3-chloro-benzyl)-6-methoxy-8-piperazin-1-yl-**4H**-benzo[1,4]oxazin-3-one;  
4-benzyl-8-piperazin-1-yl-**4H**-benzo[1,4]oxazin-3-one;  
4-benzyl-6-fluoro-8-piperazin-1-yl-**4H**-benzo[1,4]oxazin-3-one;  
4-(2-fluoro-benzyl)-8-piperazin-1-yl-**4H**-benzo[1,4]oxazin-3-one;  
4-(4-fluoro-benzyl)-8-piperazin-1-yl-**4H**-benzo[1,4]oxazin-3-one;  
4-(4-chloro-benzyl)-8-piperazin-1-yl-**4H**-benzo[1,4]oxazin-3-one;  
4-(4-fluoro-benzyl)-6-fluoro-8-piperazin-1-yl-**4H**-benzo[1,4]oxazin-3-one;  
4-(2-fluoro-benzyl)-6-fluoro-8-piperazin-1-yl-**4H**-benzo[1,4]oxazin-3-one;  
4-(2-chloro-benzyl)-6-fluoro-8-piperazin-1-yl-**4H**-benzo[1,4]oxazin-3-one;  
4-(4-chloro-benzyl)-6-fluoro-8-piperazin-1-yl-**4H**-benzo[1,4]oxazin-3-one;  
6-fluoro-4-naphthalen-2-ylmethyl-8-piperazin-1-yl-**4H**-benzo[1,4]oxazin-3-one;  
4-(3-chloro-benzyl)-6-fluoro-8-piperazin-1-yl-**4H**-benzo[1,4]oxazin-3-one;  
3-(3-oxo-8-piperazin-1-yl-2,3-dihydro-benzo[1,4]oxazin-4-ylmethyl)-benzonitrile;  
4-(3-fluoro-benzyl)-8-piperazin-1-yl-**4H**-benzo[1,4]oxazin-3-one;  
4-benzyl-2,2-dimethyl-8-piperazin-1-yl-**4H**-benzo[1,4]oxazin-3-one;  
(R)-4-benzyl-2-methyl-8-piperazin-1-yl-**4H**-benzo[1,4]oxazin-3-one;  
4-benzyl-6-piperazin-1-yl-**4H**-benzo[1,4]oxazin-3-one;  
4-(4-Fluoro-benzyl)-6-piperazin-1-yl-**4H**-benzo[1,4]oxazin-3-one;  
(S)-4-Benzyl-2-methyl-8-piperazin-1-yl-**4H**-benzo[1,4]oxazin-3-one;  
8-Piperazin-1-yl-4-pyridin-4-ylmethyl-**4H**-benzo[1,4]oxazin-3-one;  
4-Benzyl-6-methyl-8-(4-methyl-piperazin-1-yl)-**4H**-benzo[1,4]oxazin-3-one;

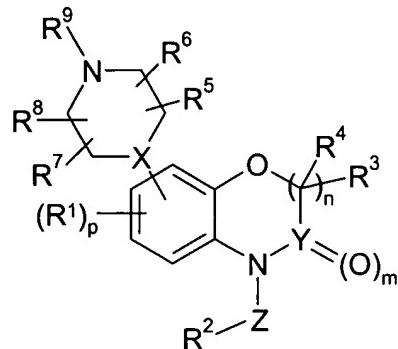
4-Benzyl-8-(4-methyl-piperazin-1-yl)-4*H*-benzo[1,4]oxazin-3-one;  
4-(1-Phenyl-ethyl)-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;  
4-(3-Methoxy-benzyl)-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;  
4-(3-Nitro-benzyl)-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;  
4-(3-Amino-benzyl)-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;  
3-(3-Oxo-8-piperazin-1-yl-2,3-dihydro-benzo[1,4]oxazin-4-ylmethyl)-benzonitrile;  
N-[3-(3-Oxo-8-piperazin-1-yl-2,3-dihydro-benzo[1,4]oxazin-4-ylmethyl)-phenyl]-methanesulfonamide;  
4-(4-Fluoro-benzyl)-2,2-dimethyl-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;  
4-(3-Fluoro-benzyl)-2,2-dimethyl-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;  
[3-(3-Oxo-8-piperazin-1-yl-2,3-dihydro-benzo[1,4]oxazin-4-ylmethyl)-phenyl]-urea;  
4-(3-Chloro-benzyl)-2,2-dimethyl-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;  
4-Benzyl-8-(3,5-dimethyl-piperazin-1-yl)-4*H*-benzo[1,4]oxazin-3-one;  
4-(4-Chloro-benzyl)-2,2-dimethyl-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;  
4-Benzyl-6-fluoro-2,2-dimethyl-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;  
4-(4-Chloro-benzyl)-6-fluoro-2,2-dimethyl-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;  
6-Fluoro-4-(3-fluoro-benzyl)-2,2-dimethyl-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;  
6-Fluoro-4-(2-fluoro-benzyl)-2,2-dimethyl-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;  
6-Fluoro-4-(4-fluoro-benzyl)-2,2-dimethyl-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;  
4-(3-Chloro-benzyl)-6-fluoro-2,2-dimethyl-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one;  
4-Benzyl-8-(3,3-dimethyl-piperazin-1-yl)-4*H*-benzo[1,4]oxazin-3-one;  
4-Benzyl-2,2-spiro-cyclobutan-8-piperazin-1-yl-4*H*-benzo[1,4]oxazin-3-one.

15. (Original) The compound of claim 6, wherein R<sup>2</sup> is heteroaryl.

16. (Original) The compound of claim 15, wherein R<sup>2</sup> is pyridine-4-yl.

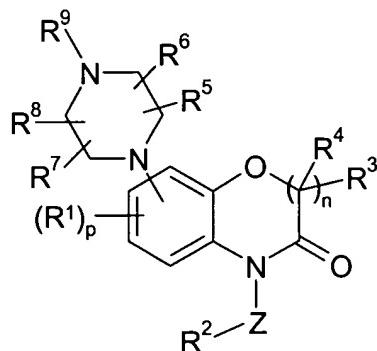
17-32. (Canceled).

33. (Original) The compound of claim 1, wherein said compound is of the formula:



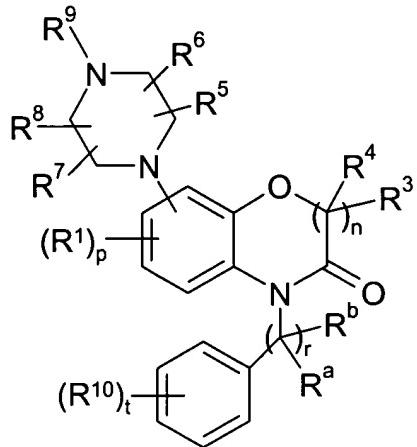
or a pharmaceutically acceptable salt or prodrug thereof, wherein X, Y, Z, R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup>, R<sup>9</sup>, m, n, and p are as defined in claim 1.

34. (Original) The compound of claim 1, wherein said compound is of the formula:



or a pharmaceutically acceptable salt or prodrug thereof, wherein Z, R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup>, R<sup>9</sup>, n, and p are as defined in claim 1.

35. (Previously Presented) The compound of claim 1, wherein said compound is of the formula:

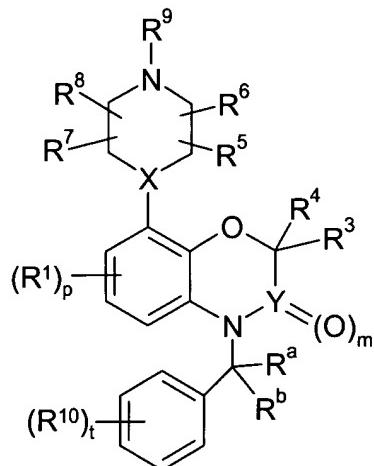


or a pharmaceutically acceptable salt or prodrug thereof, wherein  $R^1$ ,  $R^3$ ,  $R^4$ ,  $R^5$ ,  $R^6$ ,  $R^7$ ,  $R^8$ ,  $R^9$ ,  $R^a$ ,  $R^b$ ,  $n$ ,  $p$  and  $r$  are as defined in claim 1, and wherein:

$t$  is from 0 to 4; and

each  $R^{10}$  independently is halo, alkyl, alkoxy or cyano.

36. (Previously Presented) The compound of claim 1, wherein said compound is of the formula:



wherein  $X$ ,  $Y$ ,  $R^1$ ,  $R^3$ ,  $R^4$ ,  $R^5$ ,  $R^6$ ,  $R^7$ ,  $R^8$ ,  $R^9$ ,  $R^a$ ,  $R^b$ ,  $m$ ,  $p$  and  $t$  are as recited in claim 1, and wherein:

$t$  is from 0 to 4; and

each  $R^{10}$  independently is halo, alkyl, alkoxy or cyano.

37. (Original) The compound of claim 36, wherein R<sup>1</sup> is halo, methyl or methoxy.

38. (Original) The compound of claim 36 wherein R<sup>3</sup> and R<sup>4</sup> each independently is hydrogen or methyl.

39. (Original) The compound of claim 36, wherein R<sup>3</sup> and R<sup>4</sup> together with their shared carbon form a cyclobutyl group.

40. (Original) The compound of claim 36, wherein R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup>, R<sup>9</sup> each independently is hydrogen or methyl.

41. (Original) The compound of claim 36, wherein R<sup>a</sup> and R<sup>b</sup> each independently is hydrogen or methyl.

42. (Original) The compound of claim 36, wherein each R<sup>10</sup> is hydrogen, halo, nitro, cyano, amino, urea, methoxy or methanesulfonylamino.

43. (Original) A pharmaceutical composition comprising an efficacious amount of the compound of claim 1 in admixture with a pharmaceutically acceptable carrier.

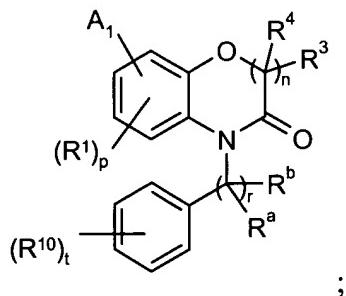
44. (Currently Amended) A method for treating ~~a central nervous system disease state memory disorders or Alzheimer's disease~~ in a subject, said method comprising administering to said subject a therapeutically effective amount of a compound of claim 1.

45. (Canceled)

46. (Canceled)

47. (Previously Presented) A method for producing a substituted benzoxazinone compound, said method comprising:

- (a) contacting an N-arylalkyl benzoxazinone of the formula:



wherein:

A<sub>1</sub> is a leaving group,

n is 1;

p is from 0 to 3;

r is from 0 to 2;

t is from 0 to 4;

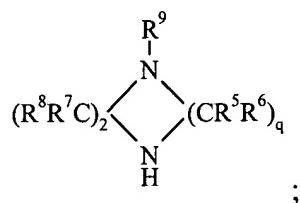
each of R<sup>a</sup> and R<sup>b</sup> is independently hydrogen or alkyl;

each R<sup>1</sup> is independently halo, alkyl, haloalkyl, heteroalkyl, alkoxy, cyano, -S(O)<sub>s</sub>-R<sup>c</sup>, -C(=O)-NR<sup>c</sup>R<sup>d</sup>, -SO<sub>2</sub>-NR<sup>c</sup>R<sup>d</sup>, -N(R<sup>c</sup>)-C(=O)-R<sup>d</sup>, or -C(=O)R<sup>c</sup>, where each of R<sup>c</sup> and R<sup>d</sup> is independently hydrogen or alkyl and s is from 0 to 2;

each of R<sup>3</sup> and R<sup>4</sup> is independently hydrogen or alkyl; and

each R<sup>10</sup> is independently halo, alkyl, alkoxy or cyano;

with a heterocyclic compound of the formula:

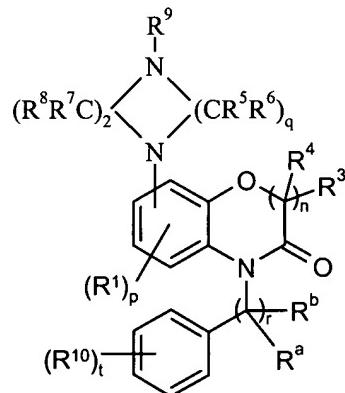


wherein:

q is from 1 to 3; and

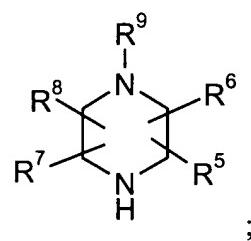
each of R<sup>5</sup>, R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup> and R<sup>9</sup> is independently hydrogen or alkyl, or one of R<sup>5</sup> and R<sup>6</sup> together with one of R<sup>7</sup>, R<sup>8</sup> and R<sup>9</sup> may form a ring of 5 to 7 members;

in the presence of a palladium catalyst to produce the heterocyclyl-substituted N-arylalkyl benzoxaninone compound of the formula:

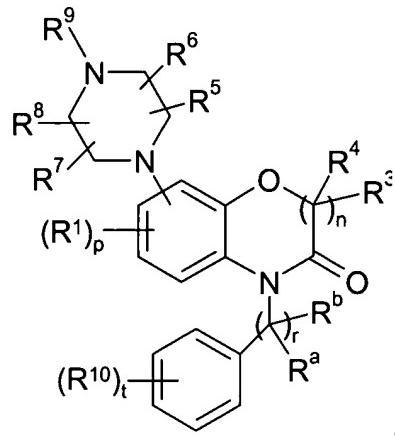


48. (Original) The method of claim 47, wherein the leaving groups A<sup>1</sup> is halo.

49. (Previously Presented) The method of claim 47, wherein the heterocyclic compound is of the formula:



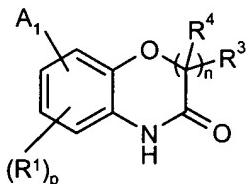
such that the heterocyclyl-substituted N-arylalkyl benzoxaninone compound is of the formula:



and R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup>, R<sup>9</sup>, R<sup>10</sup>, n, p, r and t are as described in claim 47.

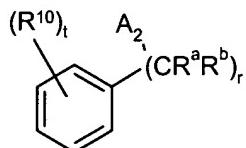
50. (Original) The method of claim 47, further comprising:

(a) contacting a benzoxazinone of the formula:



wherein n, p, A<sub>1</sub>, R<sup>1</sup>, R<sup>3</sup> and R<sup>4</sup> are as described in claim 1,

with an alkylating agent of the formula:



wherein:

A<sub>2</sub> is a leaving group and may the same or different from A<sub>1</sub>; and

r, t, R<sup>a</sup>, R<sup>b</sup> and R<sup>10</sup> are as described in claim 41;

to produce the N-arylalkyl benzoxazinone of the formula:

